DEPARTMENT OF EXPERIMENTAL AND CLINICAL PHARMACOLOGY

2014 Annual Report
DEPARTMENT OF
EXPERIMENTAL AND CLINICAL PHARMACOLOGY

2014 Annual Report

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The University's mission, carried out on multiple campuses and throughout the state, is threefold: research and discovery, teaching and learning, and outreach and public service. The University of Minnesota shall provide equal access to and opportunity in its programs, facilities, and employment without regard to race, color, creed, religion, national origin, gender, age, marital status, disability, public assistance status, veteran status, sexual orientation, gender identity, or gender expression.
This publication is available in alternative formats upon request. Direct requests to Erin McGonagle, Department of Experimental and Clinical Pharmacology, mcgo0064@umn.edu, 612-624-7639.
DEAR COLLEAGUES AND FRIENDS,

The mission of the Department of Experimental and Clinical Pharmacology is to discover, disseminate, and apply new knowledge related to safe, effective, and economical medication use in patients.

The success of a department depends upon its members: their innovative and rigorous research, their leadership and service within the profession, the passion and excellence they bring to training the next generation of thinkers and practitioners. I am proud to say that the Department of Experimental and Clinical Pharmacology (ECP) comprises many such renowned investigators and scholars. The decades of scholarship of our professors, the fresh perspectives of our junior faculty, along with the proven excellence of our research and administrative staff, all contribute to our department’s standing as one of the top programs of its kind in the nation.

In the past year, new sponsored projects by faculty researchers were begun in areas as diverse as Alzheimer’s disease, Parkinson’s disease, and tobacco dependence, to name but a few. ECP faculty have also taken on a leadership role in helping advance the University’s efforts in the area of Precision Medicine and Health.

In order to strategically build upon the existing expertise of our renowned faculty, the department proudly welcomed two new members in August 2014 after an extensive national search. Dr. Melanie Nicol, who specializes in drug therapy issues of patients receiving HIV medications, joined us as a tenure-track assistant professor. Dr. Jeffrey Bishop joined us as a tenured associate professor specializing in the pharmacogenetics of psychotherapeutic agents; he will also contribute to ongoing and new initiatives related to precision medicine.

We congratulate ECP faculty member and director of graduate studies Angela K. Birnbaum, who was promoted this past year from associate professor to professor (with tenure). Dr. Birnbaum has also shepherded the rollout of a new research emphasis track for professional students who seek a structured approach to becoming more involved in translational research.
Teaching and training the next generation of clinical scientists and scholars continues to be a significant part of ECP’s role within the College. The second year of our new curriculum for Pharm.D. students commenced, and our faculty worked tirelessly to ensure the outstanding educational experience for which the College of Pharmacy has become known.

In 2014, students within our distinguished ECP graduate program, which trains future leaders of clinical and translational research within human pharmacology and therapeutics, presented research abstracts at national conferences, had publications accepted in peer-reviewed journals, and won competitive fellowships to support their graduate research. ECP also continues to actively build a strategic alignment with the University’s Clinical and Translational Science Institute and has an impressive record of being awarded their competitive summer research scholarships for students in the professional and graduate programs.

I am pleased to present you with this 2014 Annual Report. More of our department successes from the last year are cataloged in the pages that follow. I invite you to read through the diverse array of accomplishments that establish our department as a leading group of translational scientists in the discipline of experimental and clinical pharmacology.

Robert J. Straka, Pharm.D.
Professor and Department Head
FACULTY

Angela K. Birnbaum, Ph.D.
Professor, Director of Graduate Studies

Jeffrey Bishop, Pharm.D., M.S.
Associate Professor

Richard C. Brundage, Ph.D., Pharm.D.
Professor

Scott A. Chapman, Pharm.D.
Associate Professor

James C. Cloyd, Pharm.D.
Professor, Weaver Endowed Chair in Orphan Drug Development

Jeannine M. Conway, Pharm.D.
Assistant Professor; Director of Applied Learning

Esam El-Fakahany, Ph.D.
Professor, Associate Dean for Research and Graduate Studies

Cynthia R. Gross, Ph.D.
Professor

David R. Guay, Pharm.D.
Professor Emeritus

Pamala A. Jacobson, Pharm.D.
Professor

L’Aurelle A. Johnson, Ph.D.
Assistant Professor

Mark N. Kirstein, Pharm.D.
Associate Professor

Michael Kotlyar, Pharm.D.
Associate Professor

Ilo E. Leppik, M.D.
Professor

Ling Li, Ph.D.
Professor; VFW Endowed Chair in Geriatric Pharmacology

Henry J. Mann, Pharm.D.
Professor Emeritus

Susan E. Marino, Ph.D.
Assistant Professor

Michele Anderson, Ph.D.
Research Assistant Professor

Andrew Behm, Pharm.D., CGP
Assistant Professor

Greg Beilman, M.D.
Professor

Lisa Coles, Ph.D.
Research Assistant Professor

Kristin Engebretnes, Pharm.D.
Professor

Mary E. Foss, Pharm.D.
Assistant Professor

John F. Gualtieri, Pharm.D.
Assistant Professor

Serge Guzy, Ph.D.
Professor

Nitin Kaila, Ph.D.
Assistant Professor

Reena Kartha, Ph.D.
Research Assistant Professor

Daniel E. Keyler, Pharm.D.
Professor

Frank N. Konstantinides, M.T., M.S.
Professor

Robert Kriel, M.D.
Research Professor

Smita Kshirsagar, Ph.D.
Instructor

Marie D. Kuker, R.Ph.
Assistant Professor

Stephen H. LeMaster, Pharm.D.
Assistant Professor

Len Lichtblau, Ph.D.
Associate Professor

Ramaiah Muthyala, Ph.D.
Associate Professor

Patrick J. Parks, M.D., Ph.D.
Associate Professor

Melanie R. Nicol, Ph.D.
Assistant Professor

William S. Oetting, Ph.D.
Professor

Marnie L. Peterson, Ph.D., Pharm.D.
Associate Professor; Associate Director of Graduate Studies

John C. Rotschafer, Pharm.D.
Professor

Shellina Scheiner, Pharm.D.
Assistant Professor

Leo J. Sioris, Pharm.D.
Professor

Debra J. Skaar, Pharm.D.
Associate Professor

Robert J. Straka, Pharm.D.
Professor, Department Head

ADJUNCT FACULTY

David Parra, Pharm.D.
Associate Professor

Pamela A. Pawloski, Pharm.D.
Assistant Professor

Kelly M. Sioris, Pharm.D.
Assistant Professor

Catherine St. Hill, D.V.M., Ph.D.
Assistant Professor

John V. St. Peter, Pharm.D.
Associate Professor

Jeanine Utz, Pharm.D.
Assistant Professor

Chester B. Whitley, M.D., Ph.D.
Professor

Melanie R. Nicol, Ph.D.
Assistant Professor

William S. Oetting, Ph.D.
Professor

Marnie L. Peterson, Ph.D., Pharm.D.
Associate Professor; Associate Director of Graduate Studies

John C. Rotschafer, Pharm.D.
Professor

Shellina Scheiner, Pharm.D.
Assistant Professor

Leo J. Sioris, Pharm.D.
Professor

Debra J. Skaar, Pharm.D.
Associate Professor

Robert J. Straka, Pharm.D.
Professor, Department Head

Rank and appointment as of 12/31/2014.
Research and Administrative Staff

Michele Anderson, Ph.D. .................................................. Senior Research Associate, Peterson Research Program
Laura Breshears, Ph.D. .................................................. Research Associate, Peterson Research Program
Marcia Brott ................................................................. Assistant Scientist, Oetting Research Program
Rebecca Brown ............................................................. Study Coordinator, Jacobson Research Program
Carol Ann Dickinson ..................................................... Associate Administrator
Sheena Dufresne ........................................................... Study Coordinator, Kotlyar Research Program
James Fisher ................................................................. Technical Director, CPAS Laboratory
Kathy Fox ......................................................................... Study Coordinator, Birnbaum Research Program
Laurie Baeker Hovde ....................................................... Coordinator, MTRF Laboratories
Dede Johnston .................................................................. Associate Administrator
Reena Kartha, Ph.D. ...................................................... Research Associate, Center for Orphan Drug Research
Frank N. Konstantinides, M.T., M.S. .............................. Director, CPAS Laboratory
Kyle LeBlanc ................................................................. Junior Scientist, Li Research Program
Erin McGonagle ............................................................ Program/Project Specialist
Annie Mills ..................................................................... Study Coordinator, Kotlyar Research Program
Usha Mishra ................................................................. Assistant Scientist, Center for Orphan Drug Research
John O. Rarick .................................................................. Study Coordinator, Birnbaum Research Program
Malek Okour, B.S. .......................................................... Junior Scientist, Birnbaum Research Program
Harrison Tam, B.S. .......................................................... Scientist, CPAS Laboratory

Continuing Graduate Students—Fall 2014

Mariam Ahmed, B.S. .................................................. Advisor: Richard C. Brundage, Ph.D., Pharm.D.
Ali Alhadab, Pharm.D. .................................................. Advisor: Richard C. Brundage, Ph.D., Pharm.D.
Co-Advisor: Marnie L. Peterson, Ph.D., Pharm.D.
Caroline Churchill, B.S. ................................................ Advisor: Carolyn Fairbanks, Ph.D.
Taraswi Mitra Ghosh, M.Sc. ........................................... Advisor: Jatinder Lamba, Ph.D.
Aaron Gillman, B.S. ..................................................... Advisor: Ling Li, Ph.D.
Mary Holmay, R.N. ....................................................... Advisor: James C. Cloyd, Pharm.D.
David Hottman, B.S. ..................................................... Advisor: Ling Li, Ph.D.
Krista Johnson, B.S. ..................................................... Advisor: James C. Cloyd, Pharm.D.
Chay Ngee Lim, B.Sc. ................................................... Advisor: Angela K. Birnbaum, Ph.D.
Malek Okour, B.S. ....................................................... Advisor: Richard C. Brundage, Ph.D., Pharm.D.
Cristina Peterson, B.S. ................................................ Advisor: Carolyn Fairbanks, Ph.D.
Youssef Roman, Pharm.D. .......................................... Advisor: Robert J. Straka, Pharm.D.
Kinjal Sanghavi, B.Pharm. ........................................... Advisor: Pamala A. Jacobson, Pharm.D.
Harrison Tam, B.S. ........................................................ Advisor: L’Aurelle A. Johnson, Ph.D.

New Graduate Students—Fall 2014

Samuel P. Callisto .......................................................... Advisor: Susan E. Marino, Ph.D.
Natalie S. Schmitz ........................................................ Advisor: James C. Cloyd, Pharm.D.

New and Continuing Post-Docs, Fellows, and Residents

Sai Praneeth Reddy Bathena, Ph.D. .................................. Advisor: Angela K. Birnbaum, Ph.D.
Laura Breshears, Ph.D. .................................................. Advisor: Marnie L. Peterson, Ph.D., Pharm.D.
Shawu Cheng, Ph.D. ..................................................... Advisor: Ling Li, Ph.D.
Shuang Liang, Ph.D. ..................................................... Advisor: Mark N. Kirstein, Pharm.D.
Joseph Schneider, Pharm.D. ........................................... Advisor: James C. Cloyd, Pharm.D.
RESEARCH

Groundbreaking and critical research is conducted in the Department of Experimental and Clinical Pharmacology. Faculty research programs focus on oncology, transplantation, infectious diseases, genomics, geriatrics, critical care, neuroscience, cardiovascular diseases, pediatrics, integrative therapies and outcomes, and psychiatry. ECP is home to the Lawrence C. Weaver Endowed Chair in Orphan Drug Development and the VFW Endowed Chair in Geriatric Pharmacotherapy. In addition, ECP’s state-of-the-art, CLIA-certified Clinical Pharmacology Analytical Services Laboratory has provided an important research resource to both University researchers and external customers for ten years.

Our 23 regular faculty members routinely present important research findings at national and international conferences, lecture and collaborate across the country, serve as reviewers and editorial board members of international journals, hold leadership positions in national organizations, and serve on National Institutes of Health and other granting agencies’ review committees.

In 2014:

• New grants received by ECP faculty = 22
• Peer-reviewed articles published by ECP faculty = 62
• Books and chapters published by ECP faculty = 4
• Department expenditures on sponsored projects (exclusive of salaries/fringe) = $1,919,492
• Department salaries/fringe offset by sponsored projects = $1,745,449
• Percentage of ECP faculty salaries generated by sponsored projects in FY 2014 (July 1, 2013 to June 30, 2014) = 19.2%
**Research Centers within ECP**

- Center for Clinical and Cognitive Neuropharmacology (Dr. Susan Marino)
- Center for Excellence in Critical Care (Dr. Greg Beilman)
- Center for Forecasting Drug Response
- Center for Orphan Drug Research (Dr. Jim Cloyd)
- Pathway-Driven Pharmacogenomics U of M Alliance – Institute for Personalized Medicine (Dr. Pamala Jacobson)

**New Sponsored Projects by ECP Faculty in 2014**

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Project Description</th>
<th>Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>James C. Cloyd (PI)</td>
<td>Prodrug/Enzyme Combinations for Rapid Nasal Absorption of Benzodiazepines</td>
<td>American Epilepsy Society</td>
</tr>
<tr>
<td>James C. Cloyd (Co-I)</td>
<td>Canine Epilepsy: Genetic Variants, Biomarkers, and New Therapies</td>
<td>American Kennel Club</td>
</tr>
<tr>
<td>James C. Cloyd (PI), Ilo E. Leppik (Co-I)</td>
<td>Prodrug/Enzyme Systems for Intranasal Treatment of Seizure Emergencies</td>
<td>Epilepsy Foundation of America</td>
</tr>
<tr>
<td>James C. Cloyd (PI)</td>
<td>Pharmacotherapy of Inherited Metabolic Disease Pharm.D. Fellowship</td>
<td>Genzyme Corporation</td>
</tr>
<tr>
<td>James C. Cloyd (Co-I), Lisa Coles (Co-I)</td>
<td>Use of N-Acetyl Cysteine for the Prevention and Treatment of Hyperglycemia Awareness Autonomic Failure</td>
<td>Juvenile Diabetes Research Foundation</td>
</tr>
<tr>
<td>James C. Cloyd (Co-PI)</td>
<td>Lysosomal Disease Network</td>
<td>NIH National Institute of Neurological Disorders and Stroke</td>
</tr>
<tr>
<td>Faculty</td>
<td>Project Description</td>
<td>Sponsor</td>
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<tr>
<td>--------------------------</td>
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</tr>
<tr>
<td>James C. Cloyd (PI)</td>
<td>Role of Oxidative Stress and Inflammation in Type 1 Gaucher Disease: Potential Use of Antioxidant/Anti-Inflammatory Medications</td>
<td>NIH National Institute of Neurological Disorders and Stroke</td>
</tr>
<tr>
<td>James C. Cloyd (Co-I)</td>
<td>Oral NAC for Parkinson's Disease: Repeated Dose Pharmacokinetics and Pharmacodynamics</td>
<td>Parkinson's UK</td>
</tr>
<tr>
<td>Jeannine M. Conway (PI)</td>
<td>A Community Pharmacy Coordinated Program to Enhance Control of High Blood Pressure and Diabetes in a Suburban Minnesota Community</td>
<td>Centers for Disease Control/MN Department of Health</td>
</tr>
<tr>
<td>Mark N. Kirstein (PI)</td>
<td>Optimization of Imprime PGG Effect on Antitumor Activity of Tumor Targeting Monoclonal Antibody in Syngeneic/Xenogeneic Tumor Mouse Model</td>
<td>Biothera</td>
</tr>
<tr>
<td>Michael Kotlyar (PI)</td>
<td>Effect of Banning Menthol Flavored Cigarettes on Smoking Cessation</td>
<td>Clearway MN</td>
</tr>
<tr>
<td>Robert Kriel (PI)</td>
<td>Development of Intravenous Baclofen</td>
<td>Allaysis</td>
</tr>
<tr>
<td>Robert Kriel (PI), James Cloyd (Co-I), Lisa Coles (Co-I)</td>
<td>Prevention of Baclofen Withdrawal Syndrome: Two-Way Crossover Study</td>
<td>Paralyzed Veterans of America</td>
</tr>
<tr>
<td>Susan E. Marino (PI)</td>
<td>Assay Validation of Vinpocetine and Apovincaminic Acid by LC-MS</td>
<td>Stanford University</td>
</tr>
<tr>
<td>Marnie L. Peterson (PI)</td>
<td>Mucosal Biofilm Infection Model of Methicillin Resistant Staphylococcus aureus for Screening of Novel Anti-Biofilm Agents/Formulations</td>
<td>CSA Biotech</td>
</tr>
<tr>
<td>John Rotschafer (PI)</td>
<td>Infectious Diseases Pharmacy Fellowship Forum 2015</td>
<td>Cubist Pharmaceuticals, Inc.</td>
</tr>
</tbody>
</table>
### New Intramural Projects by ECP Faculty in 2014

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Project Description</th>
<th>Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>James C. Cloyd (PI)</td>
<td>Acquisition of a Triple Quad LC-MS System for Translational Research on Orphan Drugs</td>
<td>U of M Grant-in-Aid of Research, Artistry &amp; Scholarship Program</td>
</tr>
<tr>
<td>Michael Kotlyar (PI)</td>
<td>Novel Medication as a Potential Smoking Cessation Aid</td>
<td>AHC Faculty Research Development Program</td>
</tr>
<tr>
<td>Ling Li (PI)</td>
<td>Role of C-Reactive Protein in Alzheimer’s Disease</td>
<td>AHC Faculty Research Development Program</td>
</tr>
<tr>
<td>Marnie L. Peterson (PI)</td>
<td>The Role of the Vaginal Microbiota in Sexually Transmitted Infections (STI)</td>
<td>U of M Grant-in-Aid of Research, Artistry &amp; Scholarship Program</td>
</tr>
<tr>
<td>Robert Straka (PI)</td>
<td>Genomics of Hyperuricemia Therapy in Hmong</td>
<td>CTSI Community Health Collaborative Grants Program</td>
</tr>
</tbody>
</table>

### Ongoing Sponsored Projects by ECP Faculty in 2014

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Project Description</th>
<th>Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angela K. Birnbaum (Co-PI), Jatinder Lamba (Co-PI)</td>
<td>Pharmacogenomics and Pharmacokinetics of Lamotrigine in Early Pregnancy</td>
<td>Epilepsy Foundation of America, Inc.</td>
</tr>
<tr>
<td>Angela K. Birnbaum (Co-I)</td>
<td>Preclinical Studies of a Heroin/Morphine Vaccine for Opiate Addiction</td>
<td>NIH National Institute on Drug Abuse</td>
</tr>
<tr>
<td>Angela K. Birnbaum (PI)</td>
<td>Maternal Outcomes and Neurodevelopmental Effects of Antiepileptic Drugs – Pharmacokinetics Laboratory Core</td>
<td>NIH National Institute of Neurological Disorders and Stroke</td>
</tr>
</tbody>
</table>
### Ongoing Sponsored Projects by ECP Faculty in 2014, continued

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Project Description</th>
<th>Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angela K. Birnbaum (PI)</td>
<td>Pharsight–University of Minnesota Pharmacometrics Collaboration</td>
<td>Pharsight Corporation</td>
</tr>
<tr>
<td>Richard C. Brundage (PI)</td>
<td>University of Minnesota Clinical and Translational Science Institute</td>
<td>NIH National Institute for General Medical Sciences</td>
</tr>
<tr>
<td>Richard C. Brundage (PI)</td>
<td>Pharmacogenetics and Drug Interactions</td>
<td>NIH National Institute of General Medical Sciences</td>
</tr>
<tr>
<td>Richard C. Brundage (PI)</td>
<td>Novartis Pharmacometrics Traineeship</td>
<td>Novartis Pharma AG</td>
</tr>
<tr>
<td>Richard C. Brundage (PI)</td>
<td>Pfizer Pharmacometrics Traineeship</td>
<td>Pfizer, Inc.</td>
</tr>
<tr>
<td>James C. Cloyd (PI), Lisa Coles (Co-I)</td>
<td>Identifying New Therapies for Infantile Spasms</td>
<td>Cure Foundation/Department of Defense</td>
</tr>
<tr>
<td>James C. Cloyd (PI)</td>
<td>Clinical Pharmacotherapy and Pharmacogenetics of Inherited Metabolic Diseases</td>
<td>Genzyme Corporation</td>
</tr>
<tr>
<td>James C. Cloyd (PI), Lisa Coles (Co-I)</td>
<td>Differential Pharmacological Effect of Ezogabine on Canine EEG</td>
<td>GlaxoSmithKline</td>
</tr>
<tr>
<td>James C. Cloyd (Co-I), Reena Kartha (Co-I)</td>
<td>Phase II Clinical Trial to Evaluate the Benefits of Post-Conditioning in STEMI</td>
<td>NIH National Heart, Lung, and Blood Institute</td>
</tr>
<tr>
<td>Esam E. El-Fakahany (Co-I)</td>
<td>Leveraging Best Practices in Mentoring from the Collective Experience of CNPCs</td>
<td>NIH National Institute on Minority Health and Health Disparities</td>
</tr>
<tr>
<td>Cynthia R. Gross (PI)</td>
<td>Mindfulness for Symptom Reduction: A Transplant Candidate Study (a project within the program grant Studies of Organ Transplantation in Animals and Man)</td>
<td>NIH National Institute of Diabetes and Digestive and Kidney Diseases</td>
</tr>
<tr>
<td>Faculty</td>
<td>Project Description</td>
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</tr>
<tr>
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</tr>
<tr>
<td>Pamala A. Jacobson (Co-I), Mark N. Kirstein (Co-I)</td>
<td>Cancer Center Support Grant</td>
<td>NIH National Cancer Institute</td>
</tr>
<tr>
<td>Pamala A. Jacobson (Co-I), William S. Oetting (Co-I)</td>
<td>Genomics of Kidney Transplantation</td>
<td>NIH National Institute of Allergy and Infectious Diseases</td>
</tr>
<tr>
<td>Mark N. Kirstein (PI)</td>
<td>Vitamin D₃ Effects on Musculoskeletal Symptoms with Use of Aromatase Inhibitors</td>
<td>Park Nicollet Institute</td>
</tr>
<tr>
<td>Michael Kotlyar (PI)</td>
<td>Smoker Response to Banning of Menthol-Flavored Cigarettes</td>
<td>Clearway MN</td>
</tr>
<tr>
<td>Michael Kotlyar (Co-I)</td>
<td>Evaluating New Nicotine Standards for Cigarettes</td>
<td>NIH National Institute on Drug Abuse</td>
</tr>
<tr>
<td>Michael Kotlyar (PI)</td>
<td>Medicinal Nicotine for Preventing Stress-Induced Craving and Withdrawal Symptoms</td>
<td>NIH National Institute on Drug Abuse</td>
</tr>
<tr>
<td>Ilo E. Leppik (Co-I)</td>
<td>Leveraging the EHR to Collect and Analyze Social, Behavioral &amp; Family Factors</td>
<td>NIH National Library of Medicine</td>
</tr>
<tr>
<td>Ilo E. Leppik (PI)</td>
<td>A Randomized, Double-Blind, Placebo-Controlled Study of the Safety and Efficacy of Intranasal Midazolam (USL261) in the Outpatient Treatment of Subjects with Seizure Clusters</td>
<td>PharmaNet, Inc.</td>
</tr>
<tr>
<td>Ling Li (PI)</td>
<td>ApoJ/Clusterin Peptide as a Novel Therapeutic Agent for Alzheimer's Disease</td>
<td>Alzheimer's Drug Discovery Foundation</td>
</tr>
</tbody>
</table>
## Ongoing Sponsored Projects by ECP Faculty in 2014, continued

<table>
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<tr>
<th>Faculty</th>
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</thead>
<tbody>
<tr>
<td>Ling Li (PI)</td>
<td>Protective Mechanisms of Statins in Alzheimer’s Disease</td>
<td>NIH National Institute on Aging</td>
</tr>
<tr>
<td>Susan E. Marino (PI), Angela K. Birnbaum (Co-I), Pamala A. Jacobson (Co-I)</td>
<td>Cognitive and Motor Effects of Treatment with a Calcineurin Inhibitor (Tacrolimus) versus Belatacept in Kidney Transplant Patients</td>
<td>Bristol-Myers Squibb Company</td>
</tr>
<tr>
<td>Susan E. Marino (PI)</td>
<td>Professional Fighters Brain Health Study</td>
<td>The Cleveland Clinic</td>
</tr>
<tr>
<td>Susan E. Marino (PI), Angela K. Birnbaum (Co-I), Ilo E. Leppik (Co-I)</td>
<td>Characterizing and Predicting Drug Effects on Cognition</td>
<td>NIH National Institute of Neurological Disorders and Stroke</td>
</tr>
<tr>
<td>Marnie L. Peterson (Co-I)</td>
<td>Immunological Factors and Risk of Vulvodynia</td>
<td>NIH National Institute of Child Health and Human Development</td>
</tr>
<tr>
<td>Marnie L. Peterson (PI)</td>
<td>Mucosal Models of Infection for Antisepsis</td>
<td>3M</td>
</tr>
<tr>
<td>Shellina R. Scheiner (Co-I)</td>
<td>Minnesota Area Geriatric Education Center</td>
<td>US Department of Health and Human Services HRSA</td>
</tr>
<tr>
<td>Debra J. Skaar (Co-I)</td>
<td>Testing the Feasibility of Patient-Controlled Sedation in Ventilated ICU Patients</td>
<td>NIH National Institute of Nursing</td>
</tr>
<tr>
<td>Jeanine Utz (PI)</td>
<td>Placebo Controlled Trial Evaluating Gabapentin for the Treatment of Small Fiber Neuropathic Pain in Patients with Fabry Disease</td>
<td>Genzyme Corporation</td>
</tr>
<tr>
<td>Faculty</td>
<td>Project Description</td>
<td>Sponsor</td>
</tr>
<tr>
<td>-------------------------------</td>
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<td>----------------------------------------------</td>
</tr>
<tr>
<td>Reena Kartha (Co-I)</td>
<td>Determination of Endogenous Levels of Nitric Oxide and Hydrogen Sulfide in Patients with Obstructive Sleep Apnea</td>
<td>University of Minnesota Foundation</td>
</tr>
<tr>
<td>Mark N. Kirstein (Co-I)</td>
<td>Pilot Analysis of Unbound Sorafenib: Relevance to Efficacy and Toxicity in a Phase I Trial and to In-vitro Cytotoxicity</td>
<td>University of Minnesota Foundation</td>
</tr>
<tr>
<td>Ling Li (PI)</td>
<td>Therapeutic Potential of a Novel Neuroprotective Agent for Alzheimer’s Disease</td>
<td>Engebretson/Bighley Drug Design &amp; Development Grant</td>
</tr>
<tr>
<td>Marnie L. Peterson (PI)</td>
<td>Alpha Toxin: Role in Biofilm Formation by MRSA Wound Isolates and Therapeutic Target</td>
<td>CTSI-Ed R-to-R Scholars Program Grant</td>
</tr>
<tr>
<td>Marnie L. Peterson (PI)</td>
<td>Development of a Biotherapeutic for Prophylaxis and Treatment of S. aureus Disease</td>
<td>Engebretson/Bighley Drug Design &amp; Development Grant</td>
</tr>
<tr>
<td>Robert J. Straka (PI)</td>
<td>Pharmacogenomic Markers of Lipid Response to Fenofibrate in a Hispanic Population</td>
<td>Institute of Human Genetics</td>
</tr>
</tbody>
</table>


Published Articles by ECP Faculty in 2014, continued


Published Articles by ECP Faculty in 2014, continued


*Czech.*


Published Articles by ECP Faculty in 2014, continued


Published Articles by ECP Faculty in 2014, continued


Published Articles by ECP Faculty in 2014, continued


Published Books and Chapters by ECP Faculty in 2014


TEACHING

The College of Pharmacy consistently ranks among the top three pharmacy schools in the nation. In 2014, ECP faculty provided 1,960 hours of didactic education to 165 pharmacy students per class year, as well as students in dentistry, nursing, public health, geriatrics, and genetics. Instruction to pharmacy students included experiential education in acute care, geriatric patient care, pediatric infectious disease, and clinical toxicology. It also included teaching and directing in the pharmacotherapy series and the pharmaceutical care skills course sequence, and teaching other elective courses. In addition, ECP members participated in journal clubs throughout the University in their areas of interest and with research collaborators.

In 2014, ECP faculty mentored:

- 14 students on special research projects funded under CTSI/CHE, Melendy Scholarships, or Undergraduate Research Opportunities Program
- 15 undergraduate students
- 13 professional students
- 18 graduate students in non-ECP programs
- 15 post-doctoral fellows or residents

In 2014, ECP faculty:

- offered clerkships or experiential instruction to 102 students
- served as advisors or readers on thesis projects to 113 pharmacy students
In addition to their college teaching and research, many ECP faculty discover opportunities for service both within the University and with outside organizations and companies. The immeasurable hours they spend offering expertise and guidance are a way to give back to the community, peers and students, and the field. Faculty members had appointments on boards of directors or professional advisory boards of research organizations; others had appointments on standards and education committees with health providers in Minnesota.

In 2014, faculty reported service as manuscript reviewers for 65 journals; as proposal reviewers for 9 funding bodies; and as reviewers of faculty promotion documents for institutions across the country and around the world.

In 2014, ECP faculty:

- cited service to 31 national committees/professional organizations
- served on 34 University and AHC committees including the Faculty Senate, the Graduate Education Council, search committees, and scientific advisory groups
- had a total of 67 service commitments to committees within the College of Pharmacy and 27 within ECP
The Graduate Program is an innovative, interdisciplinary program that trains students to conduct research encompassing methodology from basic and clinical pharmacology perspectives. It was designed specifically for students interested in clinical research with the goal to advance the science of human pharmacology and therapeutics to improve the safe, effective, and economical use of drugs by patients. Students study such topics as experimental pharmacotherapy, drug metabolism, infectious disease, pharmacometrics, and pharmacogenomics. Graduates are prepared for distinguished careers in clinical research.

ECP celebrated the graduation of four students in 2014 (bringing the total number of program graduates to 41), and had a total of 16 new and continuing students in the program as of Fall 2014.
### ECP Ph.D. Graduates in 2014

<table>
<thead>
<tr>
<th>Graduate</th>
<th>Thesis Title</th>
<th>Advisor</th>
<th>Current Employer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suresh Agarwal, Ph.D.</td>
<td>Clinical Pharmacology and Pharmacometric Analyses of CNS Drugs Used in the Acute Management of Seizures and Spasticity</td>
<td>Jim Cloyd, Pharm.D.</td>
<td>AbbVie, Inc.</td>
</tr>
<tr>
<td>Caroline Churchill, Ph.D.</td>
<td>The Impact of Gene Transfer of Arginine Decarboxylase to the Central Nervous System on Opioid Analgesic Tolerance</td>
<td>Carolyn Fairbanks, Ph.D.</td>
<td>University of Minnesota</td>
</tr>
<tr>
<td>Mary Holmay, Ph.D.</td>
<td>N-acetylcysteine: Pharmacokinetics and Effects in Selected Neuro Degenerative Disorders</td>
<td>Jim Cloyd, Pharm.D.</td>
<td>Upsher-Smith</td>
</tr>
<tr>
<td>Jie Zhou, Ph.D.</td>
<td>Mitigating Oxidative Stress in Childhood Cerebral Adrenoleukodystrophy: An Investigation of N-acetylcysteine Pharmacology</td>
<td>Jim Cloyd, Pharm.D.</td>
<td>Nuventra Pharma Sciences</td>
</tr>
</tbody>
</table>

### New Ph.D. Candidates in 2014

- Mariam Ahmed, B.D.
- Taraswi Mitra Ghosh, M.Sc.
- Krista Johnson, B.S.
- Malek Okour, B.S.

### New Students in Fall 2014

- Samuel P. Callisto Advisor: Susan E. Marino, Ph.D.
- Natalie S. Schmitz Advisor: Jim Cloyd, Pharm.D.
Published Articles by Graduate Students or Post-Docs in 2014


Presentations by Graduate Students or Post-Docs in 2014

Agarwal S. Placebo responses in research and medicine. Presented at: Center for Orphan Drug Research Seminar, College of Pharmacy, University of Minnesota; 2014 Mar 6; Minneapolis, MN.

Ahmed M. PK/PD modeling of inorganic nitrate and nitrite. Presented at: Department of Experimental and Clinical Pharmacology Weekly Seminar, College of Pharmacy, University of Minnesota; 2014 Feb 12; Minneapolis, MN.

Alhadab A. Sertraline PK in HIV patients. Presented at: Department of Experimental and Clinical Pharmacology Weekly Seminar, College of Pharmacy, University of Minnesota; 2014 Apr 9; Minneapolis, MN.
Presentations by Graduate Students or Post-Docs in 2014, continued

**Hottman D.** Therapeutic potential of a novel neuroprotective compound TH-237A for Alzheimer’s disease. Presented at: Department of Experimental and Clinical Pharmacology Weekly Seminar, College of Pharmacy, University of Minnesota; 2014 Sep 17; Minneapolis, MN.

**Johnson K.** Comparison of assay methods for measurement of topiramate concentrations in blood and plasma. Presented at: Center for Orphan Drug Research Seminar, College of Pharmacy, University of Minnesota; 2014 Mar 13; Minneapolis, MN.

**Johnson K.** Comparison of blood and plasma assay methods for measurement of topiramate concentrations in children. Presented at: Minnesota Epilepsy Group; 2014 Sep; Minneapolis, MN.

**Johnson K.** Enhancing reproducibility and transparency of research findings. Presented at: Center for Orphan Drug Research Seminar, College of Pharmacy, University of Minnesota; 2014 Oct 23; Minneapolis, MN.

**Johnson K.** Use of dried blood spots to characterize topiramate disposition in children. Presented at: Minnesota Epilepsy Foundation Research Summit; 2014 Nov; Minneapolis, MN.

**Lim CN.** Pharmacokinetic-pharmacodynamic modeling of gonadotropin-releasing hormone analogues. Presented at: Department of Experimental and Clinical Pharmacology Weekly Seminar, College of Pharmacy, University of Minnesota; 2014 Oct 22; Minneapolis, MN.

**Okour M.** Population pharmacokinetic-pharmacodynamic analysis of mycophenolate. Presented at: Department of Experimental and Clinical Pharmacology Weekly Seminar, College of Pharmacy, University of Minnesota; 2014 Oct 29; Minneapolis, MN.

**Peterson C.** Chronic pain and drug addiction: a behavioral overview. Presented at: Department of Experimental and Clinical Pharmacology Weekly Seminar, College of Pharmacy, University of Minnesota; 2014 Feb 19; Minneapolis, MN.

**Roman Y.** Health disparities in knowledge of genomics: a case example of a potential missed opportunity to improve care for hyperuricemia, gout, and CVD. Presented at: Center for Health Equity Works in Progress, University of Minnesota; 2014 Feb 25; Minneapolis, MN.

**Roman Y.** Contemporary management of hyperuricemia and gout and opportunities to consider pharmacogenetics. Presented at: Department of Experimental and Clinical Pharmacology Weekly Seminar, College of Pharmacy, University of Minnesota; 2014 Nov 19; Minneapolis, MN.

**Sanghavi K.** Population pharmacokinetics of F-ARA-A in non-myeloablative stem cell transplant patients. Presented at: Department of Experimental and Clinical Pharmacology Weekly Seminar, College of Pharmacy, University of Minnesota; 2014 Mar 12; Minneapolis, MN.

**Schmitz N.** Aprepitant versus dexamethasone for preventing chemotherapy-induced delayed emesis in patients with breast cancer: a randomized double-blind study. Presented at: Sarasota Memorial Hospital Student Pharmacists and Pharmacist Preceptors (Journal Club Presentation); 2014 Feb 27; Sarasota, FL.
**Abstracts by Graduate Students or Post-Docs in 2014, continued**

**Schmitz N.** Intravenous immunoglobulin. Presented at: Sarasota Memorial Hospital Student Pharmacists and Pharmacist Preceptors; 2014 Mar 4; Sarasota, FL.

**Schmitz N.** Case presentation: cannabis hyperemesis syndrome. Presented at: Mayo Clinic Health System; 2014 Apr 10; Red Wing, MN.

**Schmitz N.** An update to the FDA’s informed consent guidance. Presented at: Center for Orphan Drug Research Seminar, College of Pharmacy, University of Minnesota; 2014 Sep 18; Minneapolis, MN.

**Zhou J.** Mitigating oxidative stress in childhood cerebral adrenoleukodystrophy: an investigation of n-acetylcysteine pharmacology. Presented at: Center for Orphan Drug Research Seminar, College of Pharmacy, University of Minnesota; 2014 Jan 23; Minneapolis, MN.

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**Presentations by Graduate Students or Post-Docs in 2014**


**Johnson KM, Coles LD, Leppik I, Patterson EE, Vuu I, Misha U, Cloyd JC.** Comparison of whole blood and plasma pharmacokinetics of intravenous topiramate in dogs with naturally-occurring epilepsy. Poster presented at: American Epilepsy Society Annual Meeting; 2014 Dec 5-9; Seattle, WA.
Abstracts by Graduate Students or Post-Docs in 2014, continued


**Straka RJ**, **Roman YM**, Xiong J, Lor M, Culhane-Pera K. Variability in prevalence of key single nucleotide polymorphisms (SNPs) within Asian populations underscores the importance of individualized genomic information when guiding drug therapy. Presented at: 7th Santorini Conference - Biology Prospective 2014; 2014 Sep 25-27; Santorini, Greece.


**Wiseman AC**, **Sanghavi K**, Cao Q, Warlick ED, Brunstein CG, Rogosheske J, Kurtzweil A, Weisdorf DJ, Jacobson PA. Association of phosphoramide (PM) and fludarabine (FLU) pharmacokinetics with treatment related mortality (TRM) after reduced intensity conditioning (RIC) hematopoietic cell transplantation (HCT). Presented at: 56th American Society of Hematology (ASH) Annual Meeting and Exposition; 2014 Dec 6-9; San Francisco, CA.
